Chapter I

Temporality Before and After the Advent of the Railways

Introduction

In this chapter I would like to explore and analyse the notion of 'time' and what is meant by the 'perception of time.' I would also like to examine how the advent of the railways has altered the notion of time and influenced the temporal practices of people to some extent. I think it may be necessary to have a reasonable understanding of the notion of time itself, for a better analysis of the influence of the railways on time. For this purpose I survey a bit of history of time and time tracking, a few theories of time and different dimensions of time.

The railway transportation technology was introduced early in the nineteenth century, first in England with the opening of the Stockton-Darlington line in 1825 and soon in various other parts of the world including the Indian subcontinent which was then a colony of Great Britain in the year 1853. It was a turning point, as this new technology ushered in hitherto unimaginable speed of travel which was at least three times faster than the previous modes. The previous modes of travel by land, other than walking, included animal driven vehicles with a maximum speed of perhaps eight to ten kilometers per hour with regular rests and breaks.

People reacted differently in different countries when they encountered these engines of speed; for example one depiction of the effects of the railways was 'the annihilation of space through time' (Harvey 299). Wolfgang Schivelbusch explains this expression as the result of a given spatial distance, traditionally covered in a fixed amount of travel time, could suddenly be dealt with in a fraction of that time. This in turn produced the effect of shrunk or annihilated space as the same space travelled was not experienced by the travelers as they had

before at a lesser speed. Schivelbusch quotes from the *Quarterly Review* (Vol.63 22) while discussing the gradual annihilation of space and time:

> For instance, supposing that railroads, even at our present simmering rate of travelling, were to be suddenly established all over England, the whole population of the country would, speaking metaphorically, at once advance *en masse,* and place their chairs nearer to the fireside of their metropolis by two-thirds of the time which now separates them from it: they would also sit nearer to one another by two thirds of the time which now respectively alienates them. (34)

It is imaginative thinking and metaphorical expression as neither space nor time is annihilated, but the traditional notions of time and space seem to be transformed. Thus the railway with its speed seems to have altered the notion of time, and influenced the temporal perceptions and practices of people to some extent.

Investigating the Concept of Time

The concept of time appears to be a rather complicated subject as time is not a physical object found in the physical world, but experienced by all in different manners and there seems to be no known sense organ identified in the human body for the purpose of perception of time. Hundreds of years of investigation on time seem to agree perhaps on the features of time: that it orders events in sequence one after the other, it specifies how long a particular event lasts, and that it indicates when events occur. Many issues about it for instance, a proper definition of time and the Christian notions of a beginning and a probable end of time etc. are still unresolved (Kermode 6). Time seems to be tracked and observed since thousands of years with a long history of time measuring devices like the water clock, the sand glass, the clepsydra, the sun dial, etc. Though the use of clocks turned out to be in practice since the thirteenth century in European countries, in some forms, first mechanical clocks arrived only in the fourteenth century (Landes 53) and precise time measuring machines, minute calculations and philosophical interpretations of time perhaps turned out to be the features of modernity.

Time Consciousness

Time consciousness perhaps existed ever since the beginning of human life along with efforts of tracking and measuring it. Though the other dimensions like length, distance and weight etc. required to be measured, evolution of their standards perhaps holds no voluminous history like that of time. Now time is measured up to seconds, minutes, and hours on a clock and divided into years, months, weeks, and days on calendars. Fractions of seconds like micro seconds and nano seconds too are measured and understood to a certain degree.

People observe the world around them often uncritically and depending on the cultural and social settings develop certain concepts which may be ambiguous and contradictory. They pretend as if everything has its place upon a 'single objective time scale' as they record the passage of time in seconds, minutes, hours, days, months, years, decades, centuries and eras (Harvey 201). David Harvey feels that this single time scale is, taking time for granted without any debates and reflections and attributing common sense understandings to it. Common sense understanding may or may not be in confirmation with scientifically and mathematically approved truths. Certain social groups that hold and guarantee these common sense concepts seem to form a politically accepted version that provides a comfortable acceptance of the natural. Antonio Gramsci calls such common sense concepts, 'folklore of philosophy. According to Gramsci, 'Common sense is not a single unique conception, identical in time and space. It is the "folklore" of philosophy, and like folklore, it takes countless different forms. It's most fundamental characteristic is that it is a conception which, even in the brain of one individual, is fragmentary, incoherent and inconsequential, in conformity with the social and cultural position of those masses whose philosophy it is' (768).Thus the commonsensical understandings of time too seem to be in disagreement with different people and different cultures. Though languages are considered as means of expression of human thoughts, Lee Whorf argues that human thinking depends on the

grammar and structure of the natural languages people speak as he declares that Hopi language contains no reference to 'time' either explicit or implicit. Sapir Whorf hypothesis where in the Hopi Indians have no words to define space and time in their language and hence they think differently, though is controversial, it encourages discourses on interrelationship between thinking, language and culture.[1]

Geography of Time

Sense of time is subjective with the only finite and effortlessly perceivable segments being the day that begins with the first ray of light and ends with the last, and the night of darkness that comes in between. However this too is not uniform because it differs in duration according to the geographical location of a certain place. While the regions surrounding the equator experience somewhat uniform length of days and nights, the Polar Regions have seasonal lengthening and shortening of days and nights.[2] That is why it seems necessary for everyone to recognize the multiplicity of the objective qualities which time can express, and the role of human practices in constructing them as David Harvey posits the notion that 'space and time are basic categories of human existence' (201).

During the time, when artificial light was not known and nights were meant for sleep or rest, the question of time perhaps existed as long as there was sunlight beginning with the first rays of daybreak, to noon, till sunset before the darkness of night set in. Rural agrarian life seems to have no need of any more temporal regulation than that of the natural or the universal time regulations. According to the nature of 'universal time' or 'natural time,' the

[1] Helmut Gipper **. '**Is There a Linguistic Relativity Principle ?**'** Special University Lecture in Linguistics at the University College of the University of London 10th May 1977. <http://www.iai.spk-berlin.de/fileadmin/dokumentenbibliothek/Indiana/Indiana_5/IND_05_Gipper.pdf>

[2] All twenty four time zones congregate at the poles, and clock time is usually manipulated for convenience. The clock time of a location outside the polar region where people have many contacts is usually chosen as the clocks in the polar region fail to indicate how high the sun is in the sky. (Josephine Arendt. Biological Rhythms during Residence in Polar Regions. *Chronobiol Int.* 2012 May; 29(4): 379–394. Published online 2012 April 12.)

whole world is a single unit. The parts of the world in which it is morning, birds begin to sing, as the rays of the morning sun slowly reach the Earth. While on the other side of the Globe, where sunset occurs, darkness envelopes the land, dogs start barking and birds return to their nests. Sunlight, sounds, and smell regulate the temporal rhythm.[3] From this harmoniously synchronized world only human beings seem to have been selected to be separate and different.

Artificial Time

This separateness seems to be strengthened by enforcing the artificial time of the clock and living by the clock. This artificial time has generated the notion of scarcity of time, though the natural flow of time does not imply any scarcity. Time seems to flow constantly without any beginning, break or end, of which some segments are displayed at a time on the clocks. Life in modern cities, industries etc. operate round the clock, and I think the best example of artificially employed time may be found in a railway station where the trains come and go with little regard for whether it is day or night. The passengers, the staff, the vendors and the noisy engines, all awake and active as can be observed, illuminated by artificial light, implement the separation of this world from the world at large guided by natural time. The human body and mind thus seem to get accustomed and adjusted to this artificial light and artificial time, as modern life demands, and gets liberated from the restrictions of natural temporal regulations and rhythms. The sundials began instructing a person about the proper time when one ought to go to dinner; earlier it was the belly that told one to eat (Landes 16).

[3]Earth clock installed in Kobe Air Terminal (2006) and in Lake Town (Koshigaya, 2008) in Japan displays this idea of different times of the day's circle in regular intervals of time display**.** Keiichiro Fujisaki, design journalist has reported about it in **'**Natural time, artificial time' Earth Clock Report Part 1: Living World in his blog <http://www.livingworld.net/blog/fujisaki-2/> on 14, 01, 2007.

Most of the living beings including humans and even a few plants seem to regulate their lives following the sunlight and darkness cycle of a particular day which is often referred to as circadian rhythm which suggests the regularity of approximately one day probably due to different biological clocks. 'Circadian rhythms are physical, mental and behavioural changes that follow a roughly twenty four hour cycle, responding primarily to light and darkness in an organism's environment. They are found in most living things, including animals, plants and many tiny microbes.'[4] Joseph Bass explains the concept of 'Biological clocks' as genetically encoded oscillators that allow organisms to anticipate changes in the light–dark environment that are tied to the rotation of the Earth. Biological clocks are said to regulate the circadian rhythm and physiology (1-35).The digestive system for example works with its regularly timed activities. Various factors, external and internal to the body may affect these rhythmic functions. The human body functions perhaps as a network of synchronized clocks. Biological clocks need to be studied to understand how the body agrees and adapts to both internal and external time regulations.

Signals and Time

A signal, like the sunrise, may initiate circadian rhythms, and continue with the internal biological clock of some kind for humans and animals. The rhythm once triggered by an external force may continue without any more additional input. The human body has many temporally ordered activities guided by the biological clock. The rhythmic heart beats and pumping of the blood with regularity and the timed activities of the digestive system may be just two examples of the many internal activities with temporal precision without any external interference. R. A. Block suggests that the biological clock perhaps is located in a brain structure near the optic pathway and this probable proximity may enable light to play a crucial role as the trigger to start the clock and the rhythm (1-35). Thus light seems to play a

[4]http://www.nigms.nih.gov.retrieved on10 March 2015.

decisive role in time perceptions. Regular and familiar sounds like that of a morning bird or a particular fragrance or sight of a flower blooming regularly at a fixed time etc. too might trigger the rhythm as they get associated with perception of time.

Perception of time is a process in which multiple factors like cultural background, social status, linguistic tools, characteristics of civilization, and individual subjectivity are involved and interlinked. Circadian rhythm and biological clocks seem set to follow natural time and rhythm. Human subjects seem to carry this 'natural' interior into the 'artificial' exterior and try to strike a balance between the two. A passenger with a biological clock regulating the circadian rhythm inside the body when getting into a train gets transferred to regulations of artificial railway time.

What is Time?

What exactly is meant by time? It may be an entity, an object—an idea that can be studied, or a mere relating link between events. When and how did time begin, and how will it end? For a believer, religious faith provides explanations to the search for the origin and the end of time. According to *The Bible*, God created light and separated the light from the darkness. Time began with the creation of light and its separation from darkness—light as day and darkness as night. Frank Kermode notes that '*The Bible* begins at the beginning ('In the beginning...') and ends with a vision of the end ('Even so, come, Lord Jesus'); the first book is Genesis, the last Apocalypse. Ideally, it is a wholly concordant structure; the end is in harmony with the beginning, the middle with beginning and end' (Kermode 6). Kermode in another chapter, 'Literary Fiction and Reality', refers to Aristotle's idea of 'a completed action' with a beginning, middle and end. And says that: 'Novels, then, have beginnings, ends, and potentiality even if the world has not'. I feel that Kermode presents the problematic of the concept of time as he calls it 'disorganized' and without 'form' which humans try to

organize and 'humanize', through his analysis of the apocalypse of different periods of time, fiction and its plot making.

Encyclopaedia of Religion (Vol.1)[5] describes how time is preserved and exhibited in religious artefacts of different religions and cultures. Many examples are cited like tracing the descent of people or preserving a long lineage of religious teachers through visual artefacts like pictures is common in religions like Buddhism. Lukasa or the memory board of Luba people of the South Eastern Democratic Republic of Congo helps to remember the stories of heroes, clan migrations, lists of kings and genealogies, all part of the time that envelopes the people and the universe. The Passover meal of the Jews using the occasion to retell the sacred story of Israel's deliverance from bondage is a symbolic remembrance of a particular time. *Memento mori*, or a reminder of human mortality through paintings, road side shrines, a marked death site or funeral site etc. remind the momentary existence of the passing moments of human life. 'Time takes many different forms and one of the primary tasks of visual culture in religious life is to articulate and maintain particular forms of time' (Jones 143). Hence I think that the Lukasas, the *memento mori*, the Buddhist pictures (the *mandala*) etc. are the exhibits of certain forms of time preserved by the people concerned and considered as 'sacred' and related to their religion and culture.

Every culture has its mythological beliefs and mythical stories, though often meaningless and absurd. According to *An Encyclopaedia of Religion*, 'The myth is generally believed to be a statement of fact by the people who use it. That belief is an error, but the error lies in taking the myth to be a truth'. A myth is neither a truth nor a complete falsehood, and 'mythologies are the organized bodies of myths belonging to people having in common a tradition and inheritance' (Ferm 516). Claude Lévi-Strauss labels mythical stories to be arbitrary, meaningless, and absurd; though they seem to reappear all over the world (3). However these

[5]*Encyclopaedia of Religion.*Vol.1 (Second Edition)**.** Lindsay Jones. (MI**:** Thomson Gale) 2005. (digital).

stories passed on by generations at some point of time tend to turn into history—a somewhat chronological recording of past events as one believes to have taken place. Laurence Coupe feels that there is a close connection between myth, language, narrative, history and imagination. The gap between mythology and history becomes so narrow and blurred history becomes either another version of the mythical story or just as a continuation of mythology. Strauss believes that history has almost replaced mythology in society and the gap which exists in the minds of people between mythology and history can probably be breached by studying histories which are conceived as not at all separated from but as a continuation of mythology (8). Temporal stories and practices of mythologies hence gradually get fused into religious faith or history. However historical time may be the time denoted by the authentic written human history of civilizations, dynasties etc. Mythological time differs from historical time as the time of Gods, deities, spirits, etc. which are neither proved nor reliable, but gets represented as historical time of humankind.

Every belief that suggests a beginning of time also presents a problematic issue as to what went before that beginning. While in *the Bible, Genesis* gives an account of creation stage by stage from the beginning[6] of time as an answer to the question of the beginning and the Apocalypse suggesting the possible end, the modern concept of time is eternal without any beginning or end. God's abode is in a different dimension—the world of the spirit. Human beings are not endowed with perceptions of this realm with the physical senses. God though eternal, infinite and timeless, the creature—the human, is temporal and finite with a beginning in birth and an end in death though it all seem to be in the middle as nothing seems to be definite. Human life is short and fills a short duration while God will continue with eternity and infinity. God's timelessness and infinity is mentioned in many places in the *Bible*, in contrast with, the finiteness of human life. In the *Book of Psalm*, timelessness of

[6]*Good News Bible*. Genesis, 1.New International Version (NIV).The Beginning.V.4-5 (Bangalore: Bible Society of India).

God is presented as: "For a thousand years in Your sight are like a day that has just gone by, or like a watch[7] in the night" (90:4). It is not possible for the human mind to grasp this everlasting and infinite timelessness of God except through all abiding and unquestioning faith. The Big Bang theory of creation of the universe too, is involved in trying to figure out the beginning of the universe and time. It seems similarly to try to resolve the puzzle of what was before the Big Bang and whether time existed in the prior emptiness, or not.

Fred Hoyle rejected the Big Bang theory and along with Jayant Narlikar invented their steady state theory (Hoyle-Narlikar Theory). He argued that the universe is being in a "steady state" and tried to explain how the universe could be eternal and essentially unchanging possibly designed by an intelligent super designer.[8] Though Hoyle does not name God, his theory somewhat resembles Genesis. Hoyle along with Chandra Wickramasinghe, invented a hypothesis that life on Earth came from outer space, spreading through the universe via panspermia.[9] I would like to trace eternity of time along with the eternal nature of the universe from Hoyle's theories though his theories are not proved in the scientific world.

According to the Vedic hymns OM is "*Shabad Brahma*"—the Cosmic Word that was first spoken by God and it created a tremendous amount of cosmic energy. With the passage of time running into millions of years, this energy got converted into mass and the divine subtle nature was formed with the primordial subtle matter i.e. the three Gunas—of purity, activity and passivity in an appropriate proportion for stability and equilibrium. Later these gunas created gross atoms as the building blocks and the gross universe was created and time existed in God even before the creation through eternity.[10]

---

[7]The word 'watch' indicates a very short duration of time as it is understood from different translations, a short duration at night that a person keeps watch. In Shakespeare's *Hamlet*, scene 1 begins with Francisco, Bernardo, Horatio, and Marcellus keeping 'watch', during night when the ghost appears.

[8]Fred Hoyle. *World Heritage Encyclopedia*.Article.http://self.gutenberg.org/article/. Retrieved on 15/12/2014.

[9]Panspermia is a theory which suggests that life on Earth was transported from somewhere else in the universe. <http:// elix.northwestern.edu/article/origin-life-panspermia-theory>

[10]'*Glimpses of Vedic Metaphysics*', An e-book by P.K Sabhlok. Retrieved on01/01/2015.

One may wonder if something like time does exist at all, or if it is just another creation of human imagination, perhaps an easy way to contain the troubling question of Time. Saint Augustine in his *Confessions* says, 'What, then, is time? If no one asks me, I know: if I wish to explain it to one that asketh, I know not' (Book XI, 166). When somebody is asked the question 'what is the time?' the most common response may be, 'time is what the clock shows' and the capitalistic society's reaction may be 'time is money'.

With the common sense understanding one may think to have acquired a fair knowledge of time but substantial research may end up with more questions than answers. This fact is evident when David S. Landes says: 'that the ordinary man (or woman) thinks he knows what time is but cannot say. The learned man, physicist or philosopher, is not so sure he knows but is ready to write volumes on the subject of speculation and ignorance' (1). I would like to infer that time thus presents itself to different people differently because of people's many ways of understanding time and space. Even though the perception of time is subjective and differs according to the cultural differences, there had been ample ways to measure time in hours, minutes, and seconds. I would like to point out that despite the ordinary views of common people on time, epistemological, metaphysical and scientific research had an influence in shaping the thinking pattern and altering the preconceived notions of time to some extent.

In the seventeenth century two most significant and contradicting theories were propounded by Isaac Newton, the physicist-mathematician and Gottfried Leibniz the philosopher-mathematician respectively. The Newtonian concept of time is absolute as 'absolute, true, and mathematical time, of itself, and from its own nature flows equably without regard to

<http ://metaphysics.sabhlokcity.com/book-chapters/ch-1.>

anything external.'[11] According to the Newtonian view, time is like an empty bucket that may hold events but without any relation to the events. And time would exist even if there is no matter and no event, as time is absolute. In opposition to the Newtonian notion of absolute time Leibniz holds time to be something merely relative and that time is an order of successions—events to take place one after the other or succeeding in certain order preventing all the events from taking place at the same point of time. Challenging Newton's theories, Leibniz maintained his view that time is relational. 'Time is not itself a physical object, but is rather a relation or ordering of such entities as is not coexistent'. Time is ideal: Being relational, time has no existence apart from the things it relates; it is therefore an *ideal entity*, and time is continuous.[12]

Time has only one directional movement. It moves forward without leaving a suggestion to know what is further on. The arrow of time thus is perhaps the one way entropy flows due to certain asymmetrical laws of nature and a reason why one is not able to revisit the past.

That is the reason why one can remember the past but cannot traverse the past, whereas it is possible to travel to the future but one cannot remember the future. Stephen Hawkins tries to explain why we remember only the past and not the future through the theory known as the Second Law of Thermodynamics and increasing entropies with the advancement of time. Hawkins explains that the increase of disorder or entropy with time is one example of what is called an arrow of time, something that distinguishes the past from the future, giving a direction to time, a single forward direction. He explains with the example how we see a cup which was in perfect position falling down and breaking into pieces but we do not see a broken cup gathering itself together off the floor and jumping back onto the table. He says

[11] Isaac Newton. (Tr.) Ian Bruce. *The Mathematical Principles of Natural Philosophy*.
< http:// 17centurymaths.com/contents/integralcalculusvol3.htm> found online on 10/11/2014.
[12]McDonough, Jeffrey K. "Leibniz's Philosophy of Physics", *The Stanford Encyclopaedia of Philosophy* (Spring 2014Edition) Edward N Zalta (ed.) URL =<http://plato.stanford.edu/archives/spr2014/entries/leibniz-physics/>

that this happens because it is forbidden by the Second Law of Thermodynamics. Disorder grows but order does not return to the early state.

> This says that in any closed system disorder, or entropy, always increases with time. In other words, it is a form of Murphy's Law: things always tend to go wrong! An intact cup on the table is a state of high order, but a broken cup on the floor is a disordered state. One can go readily from the cup on the table in the past to the broken cup on the floor in the future, but not the other way round. (72)

Roger Penrose argues that Newton's physics does not say that the reverse process is not possible as he states that, 'so far as the detailed laws of physics are concerned, one direction of time is just as good as the other' (40). Thus in linear time, reversibility though seems not impossible, it is never experienced and its impossibility in reality is perhaps common place knowledge. I think that it is possible to view past events returning to the earlier position of order only in the rewinding of a film clip, but such occurrences do not happen in real life.

To the question as to what 'time' is; time perhaps is duration, a succession free of a measurable quantity (Bergson 86), like the notes of a tune or rhythmic ringing of a bell. Passing of time perhaps leaves its imprint in observable changes like aging or seasonal alterations in nature. Clocks and watches and calendars make us observe this change and duration. So change and time are mutually interrelated as time being a precondition for change and change a condition as well as a visible proof of the passage of time.

David M. Eagleman considers time to be a construction of brain but unlike other senses of taste, touch, smell, hearing and sight, as 'the bottom line is that time is a mental construction, not an accurate barometer of what's happening "out there"' (52) as it is perceived rather than sensed. The human subject lives in a changing world and the changes that take place all around influence the perception of time. Paul Fraisse points out, in an ever changing world the concept of time is associated with world time, but one may conceive of changes in thoughts and have a notion of personal time which may not be fundamentally different from

the world time.[13] Yet the notion of time is very complex and the individual perception highly varied; which I think rather makes it problematic to analyse it as a commonly held notion.

Many have tried to find explanations to the questions on perceptions and conceptions of time. Immanuel Kant's arguments concerning the nature of time had been a great influence on Western Philosophy. Kant gives time '*a priori*'[14] representation in opposition to empirical and conceptual notions. Mathematical truths may be examples of this category. Knowledge of time for Kant is absolute and independent of experiences. Kant deals with the metaphysical (abstract and philosophical) and transcendental (Concerned with the *a priori* or intuitive basis of Knowledge as independent of experience)[15] aspects of time while ignoring the physical time, time measurement, clocks, and units of time. Time according to Kant cannot be experienced through observations as it is based on the idea of an internal self. Time existed, and it is intuitive rather than conceived or perceived. For Kant:

> Time is not an empirical concept that has been somehow drawn from experience. For, we couldn't experience events as simultaneous or as one-after-another, unless we had an underlying *a priori* representation of time. (B 46)

Kant says that we can have the thought of time without any appearances—i.e. time during which nothing exists and nothing happens—but we can't have the thought of appearances that are not in time. He calls the appearances of the world of objects which we experience, as phenomena i.e. the appearances of existence and events in the world. As perceptions and apperceptions (perceptions as modified and enhanced by one's own emotions, and biases)[16] divide reality into two realms, he distinguishes the realm of phenomena, or things as they appear to us; and the realm of noumena, or things as they might be in themselves (Habib 364)

---

[13] Paul Fraisse. 'Perception and Estimation of Time'. Annu. Rev. *Psychol.* 1984.35:1-37. <www.annualreviews.org /14.97.191.182> on 07/16/15.

[14]'*a priori*' connotes a kind of knowledge or justification that does not depend on evidence, or warrant from sensory experience. *Concise Routledge Encyclopedia of Philosophy*. London: Roultedge, 2000.

[15] http://www.thefreedictionary.com/

[16]McGraw-Hill, Sybil P. Parker. McGraw-Hill Dictionary of Scientific & Technical Terms.6E. London: The McGraw-Hill Companies, 2003.

the real world. Thus time is a presupposition by which phenomena can be experienced and time will still exist even in the absence of the phenomena and intuition. Habib points out the dual strategy of Kant distinguishing the knowable phenomena and noumena as whatever lying beyond the human understanding (364) dividing reality into realms of things as they appear to us or as they might be in themselves.

Kant in his concept of time refers to the theories of both his predecessors—Newton's absolute and real time and Leibniz's relational theory of time (Guyer 9, 10, 69). Kant seems to have not taken into consideration the fact that different civilizations and different social backgrounds have different ideas of time and each individual has a subjective experience of perceiving time. According to him different times are just parts of one and the same time. 'Different times are only parts of one single time; which is to say that necessarily time is one single item' and 'different times are not simultaneous, but successive' (B 47). But in reality there are many different ways in which people relate to the concept of time depending mainly on different civilizations and socio-cultural backgrounds. Different temporal orientations like circular, linear etc. exist in different cultures at different times in places, influenced greatly by the people's occupations, religious directions, and technological advancements.

Time: Linear and Cyclic

Harvey argues that 'in modern society many different senses of time get pinned together' (201). Two major orientations of time are linear and cyclic. Linear time is a concept of time in which there is a past, a present, and a future, and time though is divisible into distinct segments no events are repeated. Time thus linearly oriented moves ahead in a straight line from the past, through the present, to the future. Circular time orientation, does not follow a straight line, but forms a circular system in which events recur in a cyclical pattern. Though events are repeated two events can never be the same. Most of the ancient civilizations in

Asian and African countries followed the cyclical orientation of time. Judeo-Christian time orientation is linear. Biblical time is linear, with a beginning and an end. The beginning is the creation and there are hints of a definite end of the world in the last book of Revelations. Though it is linear it also may be considered circular as everything begins and ends in God.

The view of time as linear denotes the straight one directional arrow of time with no definite beginning and end. When time is symbolized in a straight line a zero may be a starting point with a straight one directional movement, based on Newton's concept of straight flow of singular directional time. I find it intriguing that though linear orientation of time is a more popular concept and linear clock is a possibility, all the clocks that are found in the market moves in circular fashion. Is it perhaps because it is easier to represent the flow of time in circular motion as it is not known from where it comes and where it goes without a beginning and end, or is it a blend of different time senses that exist? This circular representation of time, with its cyclical motion, regulates the day by day cyclical activities of people and perhaps helps to distinguish the twelve hour cycles of day and night.

Thus though the objective idea of time is an unbreakable linear flow, individual perceptions of time differ. As David Harvey projects it the linear progress of time points to the unknown and hence produces uncertainty. He says people experience multiple modes of progress of time as certain events like eating, working, sleeping, etc. being repeated at the same time every day may be mechanically and routinely cyclical whereas events like birthday, festivals seasonal sports events, etc. though cycles of repeating events are awaited eagerly. He argues that notion of 'cyclical and repetitive motions provide a sense of security in a world where the general thrust of progress appears to be ever onwards and upwards into the firmament of the unknown' (201). As the unknown creates fear and uncertainty, cyclical known events provide perhaps the safety of familiarity.

Individual subjective perceptions of time may be different, and at times the same individual may experience varied temporal proceedings as 'mental processes can play tricks, make seconds feel like years, or pleasurable hours pass by so fast we hardly notice' (Harvey 201). The familiar proverb 'the watched pot never boils', might have emerged from people's varying estimation of time at different circumstances. While waiting for something one may overestimate the passing of time and while engaged in pleasurable activities one may tend to underestimate the duration of time. Thus the subjective temporal experiences and estimations vary depending on the kind of activities involved in, during the passage of time that is estimated. Time experience is thus intimately linked with the nature of events and circumstances. An individual experiences the repetitions of similar events cyclically in day to day life within the traversal in time through the straight, never ending tunnel of linear time.

Culture, Language and Time

Temporal views may be closely related to culture as cultures seem to differ according to the manner in which time is conceptualized. For example certain cultures consider time to be cyclical while others consider it as linear. As pointed out above, Jewish and Christian notions of time contain a beginning and an end, but the modern linear time has no beginning and no end. It may even be possible for the same culture to possess different ideas of time. I would say so because, while holding the notion of linear time in general, one may also consider the repetitions of days and nights, cycles of seasons or yearly events in a circular manner. To describe and express time humans make use of language. Different languages are differently equipped to define time. Since it is next to impossible to know what another person thinks of time, what can be done is to analyze how the person expresses the concept through language either written or spoken.

Wolfgang Theis while comparing Kant and Elias points out the need of a language to describe 'time', questions a common expression of time, 'to kill time'.[17] 'To kill' presupposes that the object to be killed is alive and a mortal. When a mortal is killed, the mortality denies the existence of the mortal anymore. So Theis asks 'how can you kill something that will still exist afterwards in your perceptions?' It can be observed that the expression stays and people understand the idea, through similar expressions used in many languages.

Language according to Edward Sapir and Benjamin Lee Whorf influences thoughts and perceptions of the speakers. The thinking pattern and perception level of people with different languages differ as each language has its own particular point of view. It is language that shapes reality and the perception of reality is greatly influenced by linguistic habits. Taking insights from the study of Indian-American Hopi culture and Hopi language Whorf put together his findings as: 'it is the language that one speaks and thinks shapes one's perceptions of the world'. He also believes that as different systems of languages exist, people thinking in these different languages will acquire the notion of time and the world in general, differently. Sapir and Whorf uphold the intimate relation between culture and language that the understanding and appreciation of one is not possible without the understanding of the other. A comparative study of a few European languages and Hopi revealed differences in the linguistic structure. This underscores a varied way of thinking and a different outlook in the perception of the world.

As different languages have different grammatical categories so that every time a speaker of a particular language utters something, that creates a somewhat different observation about how the world is structured because of the structure of the language each person speaks. According to Sapir-Whorf a language like Hopi has no general notion or intuition of time as a

[17] Wolfgang Theis. "Immanuel Kant's Idea of Time vs. Norbert Elias' Critique on His Conception". Johannes Kepler Universität Linz, Austria.
<ftp://ftp.cle.unicamp.br/pub/kant-e-prints/Vol-4-1-2009/05-wolfgangtheis-4-1-2009.pdf>

smooth flowing continuum in which everything in the universe proceeds at equal rate, out of a future, through the present, into a past, and no words, grammatical forms, construction or expressions that refer directly to what is called 'time'. Sapir and Whorf argue that for the speakers of Standard Average European languages with shared structural features 'events occur', 'occurred', or 'will occur', in a definite time ; i.e., present, past, or future; but for the speakers of a language like Hopi what is important is whether an event can be warranted to have occurred, or to be occurring, or to be expected to occur and time is not apportioned into fixed segments so that certain things recur, e.g. minutes, mornings, and days.[18] I find it important to note that even though Sapir and Whorf hypothesis is not proved completely true, Kant's view of intuitive time is questioned and demolished by their construction of cultural influence in time perception.

Norbert Elias too has critically attacked Kant's idea of an *a priori* of time and that the humans do not need to learn time. Elias claims that every person has a different time perception which has been developed over generations of civilization. Elias from his own experience of vast travelling and contact with many different cultures concludes that dimensions of time are perceived in completely different manner by different cultures. Though cultural and social factors do influence one's thinking pattern about time, these patterns are not permanent or universal among all cultures (Elias 31). As the thinking pattern may change due to any change in social or cultural changes one experiences, I would like to combine all that I gather from many theories and views, that time with all its different forms as expressed by human subjects may perhaps be said to be a subjective mental perception formed by intuition with the influence of culture and social back ground. In spite of these conceptualities and awareness 'time' still is a mystery and it is perhaps not possible to find a final definition of time and a singular theory on perception of time. Language seems to help

[18] Basel Al-Sheikh Hussein. "The Sapir-Whorf Hypothesis Today", *Theory and Practice in Language Studies*, Vol. 2, No. 3, pp. 642-646, March 2012. Academy Publisher Manufactured in Finland.

one to think and perhaps one thinks in a language and hence the whole process of thinking may be limited to the limitations of the language for example a language like Hopi.

Time of Action

Language's tool of time description is its tense, the primary forms of which are past, present and future. Tense in a language is associated with verbs and an event in time may be located by the grammatical use of a tensed verb. People belonging to every culture possess certain conceptions of time and a lot of it is expressed through languages. Hence it is interesting to note that many languages in the world do not hold the forms of grammatical tenses to communicate the ordering of events. 'For example, the Chinese, Burmese and Malay languages do not have any tenses.'[19] English verbs have only two tenses namely the present tense and the past tense. Future forms of verbs do not exist, morphologically. Auxiliary verbs like 'will' and 'shall' are used to present the future. Future time in the past is expressed with two different forms 'would' (used in literary narrative styles) and 'was going to'. Future in the Past is used to express the idea that in the past one thought something would happen in the future. Likewise to express Past time in the future or a future action completed before a later future time, a combination of will + have + a past participle is used (Quirk 3.35, 78). Thus it is obvious that time and languages do not have perfect matches in tenses, even though language is used to express time. And the variation between languages in their use of time and the mismatch between tense and time in some languages show this ungraspability of time by language.

Time has only one dimension that is forward from past through present to future and it is 'inevitable, unrepeatable and irreversible' (Spirkin 62). Time past is the memory. Future is imagination or expectation. The only reality seems to be the present which is a brief moment

[19]Bradley Dowden. California State University, Sacramento,U. S. A. *An Encyclopedia of Philosophy*. *Internet Encyclopedia of Philosophy* and its Authors | ISSN 2161-0002.

before fading into the past. The present itself is not absolute because before it is realized and pinned down it is already the past. Yet time is not simply the unraveling of events from future through present to the past. St. Augustine feels that all three different times exist in our souls as:

> Perhaps it might be said rightly that there are three times: a time present of things past; a time present of things present; and a time present of things future. For these three do coexist somehow in the soul, for otherwise I could not see them. The time present of things past is memory; the time present of things present is direct experience; the time present of things future is expectation. (269)

It may be right to think that time future is passed through the present to the past. The present is the existence of temporally present objects. It is perhaps true that when objects change, it is a sign that time has passed. It may also be true that even if there are no objects to change, still time would pass. The notion of present or the presenting of the moment is perhaps the fleeting instant before its becoming the past or history that is to say that present is instantaneous. Present at times is used to denote also the contemporary. In this new category it is duration or a period which may go on for many years but includes only anything or anyone that continue living or existing in that period. Universal truths are considered present though they are of a thousand years past or to come after thousands of years. The present as one experience is the fleeting moment and the past is beyond redemption, the history which is gone.

Out of the three stages of time, the future is the one that holds hope, completely unknown and unpredictable. The promise of this unknown future is the basis of most of the religions, the hope of redemption, deliverance or a rebirth. Coming of Christ fulfilled the hope in Christian faith, and the second coming is yet another hope. ‘This necessity of an ‘after’ this ‘not yet’ is a necessity of another faith’ of another promise and another thought of revelation’ (Das 7). The hope of the future, of what is yet to come, is unpredictable but definitely finite. As the adage goes ‘All men are mortal’, the only definite truth of our existence in the indefinite

future is mortality. The promises of deliverance, time 'to come', the future is the only redemptive fulfilment for mortals. The meaning of existence for many depends on the hope of a time to come, a hope of a liberating future. It is the unknown and the hope that is exploited by most of the promises of political parties of better days and better governance if elected to power.

Time: Physical and Social

What is physical time and social time? Are they different times or is time a synthesis of both? Physics treats time as a measurable quantity along with mass, motion and speed; it is measured and considered as an attribute of physical nature and the material world. So what the clocks measure and display may be considered as physical time with its many measuring units. A second is the smallest unit of time shown in our watches and described by the physicist as: "the duration of 9 192 631 770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the cesium 133 atom,"[20] which is painfully technical for a lay person's understanding. I have observed people considering the meaning and duration of one second as that of a blinking of an eye or counting a number. According to Elias physical time 'appears as an aspect of 'physical nature', as one of the unchangeable variants, physicists measure and which play a role in mathematical equilibrations, which are thought as symbolic representatives of nature's laws' (93). This representation of the natural feature called physical time, perhaps affect certain social factors.

Humans being social are aware of the social implications of time. A temporal device of some form has become an unavoidable necessity of modern life without which life and activities are difficult to be regulated. A particular hour may be a physical time indicator in a clock but

[20] International des Poids et Mesures, (BIPM, 1967).< http://www.bipm.org/en/CGPM/db/13/1>

may denote different meanings for different people in social life. It may be an hour for someone to keep up with a meeting, a lecture, an appointment or any other of a million social commitments. Events of sports and game competitions are entirely based on time which is measured sometimes to the fractions of seconds (Van Rossum 279). Physical time as tracked and measured by a clock is constant forward flow and has no relative states like being late or early. It is the social time constraints of people that can have relational or comparative states of being late, early, and scarce or plenty as Emile Durkheim points out, 'is the rhythm of social life which is at the basis of the category of time' (440). So the physical time and social time perhaps is a combination of human experience which seems to be the same. Physical time without any social event may be rather meaningless from the point of view of a common person, though it may have significance for physicists, mathematicians and philosophers.

Location and Subjectivity of Time

Time perception is closely connected to the location in which one is placed. A person, living in the polar region, where there are vast variations in the duration of days and nights and a person living near the equator without much difference in the duration of days and nights, may develop fairly different notions of time. Another major contrast in this context may be the rural and urban locations. Rural agrarian communities have their temporal perceptions based mainly on farming cycles and events like planting time, harvest time, etc.

Time in the country side seems to be idyllic and slow just as the moving heavenly bodies. Day time with the sun light is for work or search of food and night time for sleep and rest. Time keeping is performed by the sounds of animals and shades of light during sunrise, noon and sunset in the agrarian society. Major activities like waking, tilling, eating, sleeping etc are programmed by the events like sunrise, noon, sunset, night fall and darkness (Landes 15).

Seasons indicate the beginning, progress, and the end of agricultural activities.[21] Rainy season, winter and summer all have their demarcated activities like sowing, weeding, reaping, and storing grain and hay. Calendars and clocks help to regulate and order these activities a little more strictly. There may be some societies that follow more than one time schema simultaneously. For example, in India every linguistic state has its own calendar just as certain religions have their separate calendar. The common Gregorian international calendar is used for the days, dates and months all over the country as it is in the rest of the world for almost all official and social purposes, but for certain religious festivals, rituals and agricultural purposes regional or religious calendars are consulted.

Even in contemporary agrarian societies these temporal practices are more or less similar with exceptions only where machines have replaced the manual labourers in certain areas of farming where the working hours of the machines need to be calculated. Transition from agriculture to industry and migration from villages to cities altered the time consciousness and made it more prominent. However, the agrarian society still follows the pastoral pace of leisure as beginning the work a little late or ending it a little early makes no great difference. Bishwanath Ghosh observes in his travel narrative:

> Framers-they were all unhurried in their gait, as if the world could wait while they sauntered from one place to another. But then why should they hurry? They did not belong to the world where hourly deadlines had to be met. (74)

Farmers worked at their own will and time as they had no hourly restrictions to follow but had the whole season or a long duration of time to begin or to finish a particular task rather than a particular point to begin or a marked duration to complete a task as the industrial society demands. An agrarian economy thus seems to be carefree, easy going and not much concerned by the production as nature and seasons direct the whole process. 'Scholars of European history discovered that the fundamental change in time consciousness occurred

[21] http://www.slowmovement.com/natural_rhythms.php.

with the transition from an agrarian to an industrial society that began in the Middle Ages' (van Rossum 2). According to Le-Goff-Jacques, in the fourteenth century the urban working day too was defined with reference to variable natural time, from sunrise to sunset, until the conflict of 'night labour' arose. Labour time hence had to be transformed to make it more precise and efficient. This transformation took place after a lot of conflicts that questioned the concept of time itself and Le Goff points out that by the end of the fourteenth century, 'The time which used to belong to God alone was thereafter the property of man' (44). This transition alone I think perhaps brought in a great change in the outlook of time—from religious time to secular time, a time which will no more just proclaim and remind one only about the hour of prayer, but a time to generate capital or to gather wealth.

Industrialization, enlightenment, urbanization and revolutions seem to have contributed to the transformation of the notion of time, perhaps as various activities related to education, jobs, meetings travels, family affairs and entertainment demanded the guidance of precisely measured time. Time became a factor of production and productivity began to be assessed 'in the sense of output per unit of time' (25), and clocks started coordinating the busy schedules of the city dwellers. Today every aspect of life is evaluated on the basis of time and is interlinked and defined in terms of time. Time indeed turned out to be a valuable factor of production as Marx suggests how to value the magnitude of a useful article by the quantity of the value creating substance contained in the article that is labour. And the quantity of labour is measured by its duration. According to Marx value is determined by the labour-time engaged in production and 'the quantity of labour is measured by its duration, and labour-time in its turn finds its standard in weeks, days and hours' (Das 129).

Marx says that labour-time is integrated into the value of a useful article as human effort or labour is embodied in it. The magnitude of human labour contained in the article is measured by its duration i.e. labour-time in weeks, days and hours (Marx Das 129).Thus time seems to

have become a valuable possession of the individual subject which he/she could measure with a clock and sell for a price, the value of the produced commodity.

Marx further argues that, 'The value of a commodity is related to the value of any other commodity as the labour-time necessary for the production of the one is related to the labour-time necessary for the production of the other'(130). Antonoio Negri, analyzing the Marxist temporal paradigm considers it to be original and ontological. Negri argues that 'With Marx, time becomes the exclusive material of the construction of life' (34). I would not go for a critique of Marx's theory of evaluating the commodities according to the labour time or the socially productive labour time, but I would like to emphasize Marx's contribution in assigning time a crucial role in the process of production and in political economy, which has in turn given a new dimension to the notion of time itself and the way people began to perceive it.

Time and Discipline

Time may be considered as 'the most inexorable of disciplinarians... it passes and waits for no one', says David S. Landes (2), in a world where punctuality is considered a virtue and being late a sin. Examples of temporal discipline that may be traced to the Monastic discipline as early as from the thirteenth century perhaps became the model for discipline in many other fields in future. The implementation of discipline through time needs a strictly planned description of tasks or a time table. Landes defines the background of the spiritual institutions as temporal discipline:

> 'Discipline in turn had at its centre a temporal definition and ordering of the spiritual life *omnia horis competentibus compleantur—all things should be taken* care of at the proper time.' (62)

Maintenance of discipline and punctuality was made easier with the availability of clock as clocks with precise time keeping replaced the time keepers of the past. It was the religions

that were the early advocates of clocks as the Judaeo-Christian and Islamic disciplines demanded punctuality in prayer time at regular intervals. Considering the temporal practices of the early religions, Foucault in *Discipline and Punish* argues that:

> For centuries, the religious orders had been masters of discipline: they were the specialists of time, the great technicians of rhythm and regular activities. (150)

It seems to me that the temporally disciplined cultures perhaps found it rather easy to adapt to the discipline demanded by the industrial revolution. Those who had disciplined culture and industrial advancement began to consider their culture and civilization to be superior. Empowered with such a notion of superiority they initiated efforts to impose their culture upon other cultures which they considered to be inferior. Colonization was an easy tool to impose the culture upon the colonized as it was adopted by the European countries and India was one of the destinations. Whether they had succeeded fully or not the postcolonial cultures reflect the residue left by the colonizer's culture upon the native culture in different ways, for example: in language, religion and technology.

It seems to me that the British who colonized the Indian sub-continent felt that the Indians had to be educated in the importance of time and punctuality as a part of their civilizing process, but perhaps it was not a great success among the native Indians. An anonymous racist traveller's humorous lines that appeared in the Fraser's Magazine,[22] and quoted in almost all the railway writings, narrates the efforts of the British Empire, its modern sciences and technology and its education to discipline Indians during the colonial rule. It says that they introduced clocks and insisted on the importance of time with no success. But when they introduced trains with a mechanical punctuality, Indians seemed never to be late at a railway station. This was perhaps due to the strict scheduling of the railways and being late at stations resulted in missed trains.

[22]'The Night Mail Trains in India'. *Fraser's Magazine for Town and Country* (London: John W Parker and Son) December 1856, 680.Vol. LIV.

Michel Foucault is of the opinion that the importance of the temporal discipline highlighted as the landmark of monastic life style got extended to the rest of social organizations. Foucault in his rhetoric about power brandished by the state and authority upon the subjects and subordinates in disciplining and punishing, invokes the influence of the time rules of the monastic communities on the time tables of the contemporary settings such as schools, industries army camps etc. Institutional settings, with demarcated space needed strictly formulated time schedules like timetables of the monastic discipline. I think that it was possible for those who had the authority, could use time as a symbol of power to impose disciplinary measures. Foucault claims that institutions demanded strict temporal order and it seems that time and timetables were imposed upon the subordinates, whether it was a school, a hospital, or an industry where the employer could force temporal restrictions upon the worker's life. As Foucault points out:

> The time table is an old inheritance…the strict model was no doubt suggested by the monastic communities. It soon spread. Its three great methods—establish rhythms, impose particular occupations, regulate the cycles of repetition—were soon to be found in schools, workshops and hospitals. (149)

The monastic rules with temporal specifications thus seem to have become the forerunners of the timetables. Foucault considers that the new disciplines had taken up their old place without any difficulties as the industries retained a religious air with a 'factory-monastery' framework and military discipline was achieved through a rhythmic application of time punctuated by pious exercises. From these facts I would like to imagine that the educational institutions and military organizations perhaps borrowed the rigours of the monastic life with strict and elaborate time tables. The military preceded the monastery like that of the Spartan military state till around 371 B.C. and perhaps had a different temporal history as the male

members from the age of seven participated in compulsory military education, devoted their life to military service and lived communally.[23]

Time: Gendering

The notion of time as I have understood so far, I believe, does not discriminate between animate and inanimate, humans and animals or male and female. But the society often imposes temporal restrictions on women and forbids their presence in exclusively male places at certain hours especially during night hours. Prem Chowdhary says that 'Patriarchy ensures the dominance of an all-male culture.'[24] He cites examples of private as well as public places, like sitting areas in the houses, village *khaps* (sort of self-governing units) certain areas in the market place, protected from female presence where their presence is met with ridicule and violence. If one observes the activities of any old patriarchal society one may find that almost all the decisions concerning time schedules for agricultural activities are decided and fixed by a village priest who is a male or a group of male members. For example I find it important to note that Chinua Achebe's novel *Arrow of God* has presented this process in detail as it existed in the African civilization. Ezeulu, the Chief Priest of Ulu keeps ardent and constant watch of the sky to plan the events, days, and festivals and thus fixing and controlling the year, the festivals, planting and harvesting the crops, and the people. For days he watched the sky to sight the new moon to inform and instruct the people of his clan. Ezeulu himself considers 'the immensity of his power over the year and the crops and therefore over the people. He named the day for the feast of the Pumpkin Leaves and for the New Yam Feast... If he should refuse to name the day there could be no festival, no planting and no reaping' (Achebe 2).The male/male groups thus seem to be the custodians of time.

[23] <http://history.com/ Spartan military>
[24] Prem Chowdhary. ' Masculine Spaces: Rural Male Culture in North India'. *Economic & Political Weekly*, November 22,2014, Vol XLIX. No. 47.

I attribute the difference in male and female time as it is observed firstly by the differences in the activities they take up traditionally, or what is known as gendered activities. Male time in the ancient days meant time exclusively for hunting and farming, while female time was for household chores and child rearing unless there were any exceptions of female worriers and hunters. Secondly there may be differences in perception of time as it is considered that it differs among various categories like men, children, women, mentally unstable, subalterns etc. (Harvey 204) which needs to be researched and decided.

I find that in patriarchal societies of all time and space women were subjugated subjects considered secondary and domestic who had no freedom to express, and had no control over their own time. I think one of the reasons for this state of affairs to be that almost all the religions propagated the secondary status of women. As time was believed earlier to have belonged to God, it was not applied equally to male and female by the custodians of religions, who were usually, men. This is evident from the written documents of almost all the religions and cultural practises.

For example, in spite of the promise of an egalitarian society implied in the doctrines of Christianity, St. Paul clearly declares his stand on the status of women differently:

> Women should learn in silence and all humility. I do not allow them to teach or to have authority over men: they must keep quiet.[25]

The situation may not be different in any other major religions of the world. According to *Manu Smriti* an ancient Brahminical scripture of Hinduism women are even categorised along with dogs, mentally ill and lower caste people.[26] Powerful Brahmin lords who considered themselves to be superior by birth and knowledge used this scripture to render authenticity to their cruel treatment of lower caste people and women. Manu gives detailed

[25]'Paul's first letter to Thimothi' 2:11-12. *Good News: New Testament* (The Bible Society of India: Bangalore).
[26]Manu. *Manu Smriti: The Laws of Man.* 1500 B.C.E(tr.) G, Buhler.3.24.

instructions on how to treat women in the society with details as to how to curb their independence and how and where she should live at every stage of her life:

> Girls are supposed to be in the custody of their father when they are children, women must be under the custody of their husband when married and under the custody of her son as widows. In no circumstances is she allowed to assert herself independently...Men may be lacking virtue, be sexual perverts, immoral and devoid of any good qualities, and yet women must constantly worship and serve their husbands.[27]

So a woman's time was meant to serve her father, brother, husband and son. According to Julia Kristeva, women's time is cyclical and their life is only repetition of repetitions (191) whereas men live in linear time where they can progress in life. Women deprived of linear time had no possibility of making progress in life but left with the cyclical repetitions of domesticity and procreation. Kristeva feels that, they neither had any existence in the social space of the community to express themselves sufficiently (200) and except for a privileged minority; the rest had neither the right of language, nor a progressive linear time, but were discriminated, exploited, and oppressed. I feel that in every society men unite in protecting their supremacy over women even in the modern age as can be seen in the all male village *panchayats* and *khaps.* I find it rather strange that socio-cultural groups in different societies may have different temporal and spatial standing but females as a single group seem to have held the deprived status in almost all social settings throughout the world except for minor exceptions. That is what is reflected in Kristeva's words as she speaks about the female subjectivity in history of civilization:

> As for time, female subjectivity would seem to provide a specific measure that essentially retains repetition and eternity from among the multiple modalities of time known through the history of civilizations'. (191)

It seems to me that Kristeva feels that in patriarchal societies women are considered inferior, and sub-man and are sacrificed, and castrated. Though history had never been kind to the women folk in every respect, modernity may claim a slight tilt in the social and cultural

<http://www.hindubooks.org/manusmriti.pdf> downloaded in June 2016.
[27]Ibid., 5/151,157

placement of women with a mild acknowledgement of their existence probably the fruit of generations of protest and struggles of suffrage and feminist groups. With the modern technological developments and opening up of opportunities, at least women may perhaps dare to aspire to acquire for themselves a life of linear time, progress, economic independence, social standing and expression of individuality and desires. I am of the opinion that technology of travel like the railways opened up an opportunity for women to travel even alone which resulted in a leap in women's liberation from temporal and spatial restrictions

Differences in perception of time seem to exist in certain amount in male and female perhaps because of the historical development of views on time. Julio C. Penagos and Alejandra Ciria have conducted a study about the sex differences in subjective estimation of time during the performance of verbal and spatial tasks.[28] Differences between sexes in the subjective estimation of time, when performing tasks of verbal fluency and mental rotation of three dimensional images were studied in this research. No significant time estimation differences between sexes were found when performing the verbal fluency task. However, significant time estimation differences between the male and the female group were found with the mental rotation task.

Klaus Jaffe, Guillermo Mascitti, and Daniella Seguias conducted a study on 'Gender differences in time perception and its relation with academic performance and non-linear dynamics in the formation of cognitive systems' based on existing evidence 'that the two sexes differ not only in spatial perception, but also in elementary time processing abilities such as duration estimation'. The study confirmed the existence of gender differences in the prospective perception of time, where females tend to give longer duration estimates (Mental

[28] Julio C. Penagos and Alejandra Ciria. 'Sex Differences in Subjective Estimation of Time During the Performance of Verbal and Spatial Tasks'. <http://cogprints.org/7843/1/JPenagos.pdf> downloaded on 22-01-2016.

construction of duration influenced mainly by processes involving attention and memory[29]) than males. According to the findings of the study it appears that the sexes differ in the relationship between time assessment and mathematical skills suggesting gender differences in basic neurophysiologic processing of cognitive tasks. The study also confirmed the existing evidence for gender differences in cognitive processing, hinting to the existence of different "mathematical intelligences" with different non-linear relationships between natural or biological mathematical intuition and time perception.[30]I think that though the causes for these differences are yet to be proved whether they are biological, historical, or social, the findings upholds the idea of differences in male and female perception of time and highlights the necessity of more research on the topic.

Family Time and Industrial Time

'Family time' is the time spent in bringing up children and conducting family affairs like marriages, birth of a child etc. (Harvey 202). In olden days in rural agrarian families farming activities were done by family members in the land owned by the family where the producer and the consumer were the same with no strict demarcation between family time and work time and division of labour was within the family. With industrialization the duration of family time was reduced drastically by 'industrial time' (Harevan 7) concerned with production schedules, changes in industrial work organization and relations in industrial capital perspective. Thus the church bells, market bells, and factory bells etc. synchronized by clock time started leading, guiding, demanding and reshaping the personal as well as social life of people with different purpose and authority. After the 'church time', 'Merchant time' (Lee Goff 29) and industrialization, as Harvey argues formed new labour habits and

[29]R. A. Block, P. A. Hancock, & D. Zakay, (2000). 'Sex Differences in Duration Judgments: A Meta-Analytic Review. Memory and Cognition', 28: 1333-1346.
[30]Jaffe, Klaus; Mascitti, Guillermo; Seguias, Daniella. 'Gender Differences in Time Perception and its Relation with Academic Performance: Non-Linear Dynamics in the Formation of Cognitive Systems'. arXiv:1203.3954 03/2012 ARXIV. Downloaded on12-11-2015.

imposed new time discipline, and thus came into being' the familiar landscape of industrial capitalism, with the time-sheet, the time keeper' etc. This consciousness of economic use of time perhaps made the labourer aware of the fact that time is money and this might have also enabled them to appreciate their leisure time for family and personal use and also to fight against exploitation. Harvey argues:

> The mediaeval merchants, for example, in constructing a better measure of time for the orderly conduct of business promoted a fundamental change in the measurement of time which is indeed a change in time itself. Symbolized by clocks and bells that called workers to labour and merchants to market, separated from the natural rhythms of agrarian life, and divorced from religious significations, merchants and masters created a new chronological net in which daily life was caught. (228)

This transition from the religious time to the secular time seem significant, as time acquired some more dimensions guiding and leading everyday life of people according to measured time. Landes argues that time measurement in Medieval Europe was at once a sign of new found creativity and an agent and catalyst in the use of knowledge for wealth and power (12). He cites the 'invention of the mechanical clock as one of a number of major advances that turned Europe from a weak, peripheral, highly vulnerable outpost of Mediterranean civilization into a hegemonic aggressor' (Landes 12). It seems right to me to agree with Landes, that the invention of mechanical clock, the monopoly of clock making for many years and the temporal discipline achieved through this innovation alone perhaps helped the rise of Europe to economic and cultural superiority over most of the world for many years.

Church Time and Merchants' Time

Church time was the time for God, to regulate prayer time and the church bells reminded people of their religious duty. The merchant's time as opposed to the church time is the worldly, secular and commercial time for material gains. DohrnVan Rossum gives a detailed account of merchant's use of time during the fourteenth and fifteenth centuries, though they were not very prominent in obtaining and using clocks. He endorses Jacques Le Goff's theses

that the development of commercial networks and the spread of money created the need for more accurately measured time (226-228).Van Rossum has dismissed the idea of resistance from churches and monasteries to the installation of the public clocks. They were prompt in introducing the new technology available, and perhaps huge astronomical clocks with mechanical bell works were built initially to be installed in churches. A conflict of interests between the church and merchants also is ruled out as monasteries and churches used medieval hours for their regular prayer schedules and at times the church bells were used by the industries to end the day's labour (Van Rossum 231). Bells and time once meant for religious purpose thus began to change its nature to secular notions and public utilities of work and commerce.

According to Johannes Fabian, 'In the Judeo-Christian tradition, Time has been conceived as the medium of a sacred history'. Time was thought, but more often celebrated, as a sequence of specific events that befall a chosen people (Fabian 2). Time represented the sequential events that took place in relation to God and the chosen people. Liturgical Calendar formation and division of time has always been based on the life of Jesus, divided into Normal time, Advent, Lent and Easter denoting the major events in Christ's life. Catholic Churches in every country produce these yearly calendars. An example may be, 'Liturgical Calendar for the Dioceses of the United States of America.'[31] This perhaps was considered as sacred time or Church time which was God's time, mainly used for prayer and worship.

Van Rossum has traced writings of merchants from the year 1374 and notes that there are times of birth of children and grand children noted down in Milan. He found the emergence of a time related language as Francesco di Marco Danti, an international merchant from Prato near Florence signing his letter to his wife "In haste". di Marco Danti presents himself as a man hurrying from one appointment to another with hardly any time to rest and sleep. He lets

[31]<http://www.usccb.org/about/divine-worship/liturgical-calendar/upload/2015cal.pdf>

his constant time pressure be known: "I don't have any time, it is the twenty–first hour and I have had nothing to eat or drink."[32] He seemed to express his time constraints and pressure as he has no time to sleep, eat or rest.

Even though Le Goff hints at conflict between Church time and Merchants' time (Le Goff 30) as one of the major events in the mental history of the Middle Ages, there seem to have occurred no real conflict. Church time begins with God, is dominated by God and belongs to God. Le Ghoff points out that the Church could not even accept selling time or knowledge for a profit in business whereas the merchant needed time for commercial activities like purchase and storage of merchandise, speculation and insurance travel and accounting.

History of Time

The oldest method of deciding and calculating time probably was by observing the changes of the shadows cast by the sun. Shadows of a fixed object like a building or the varying lengths of shadows of one's own body were often used for such observations. Ancient civilizations such as Egyptian, Indian, Chinese and Islamic countries seem to have observed the movements of astronomical bodies and their effects for shaping their calendars, dates and seasons. Egyptian shadow clocks and sundials though the earliest to divide a day into equal parts were incompetent during nights and rain.[33]

Water clocks, or clepsydrae—a vessel with even inflow or outflow of water was the solution to the problems of light dependent sundials. Such water clocks were believed to be in use in India and China in the first millennium and by the Egyptians and Babylonians even prior to that (Van Rossum 23). The early complicated huge clock machines were constructed for astronomical purposes—to study the movements of the heavenly bodies and preparing

[32] (Qtd.) by Gerhard Dohrn-Van Rossum.(1996) 228.
[33] Both Gerhard Dohrn-Van Rossum and David S. Landes have given details of the early time tracking devices and their history.

calendars, and time indication seems to be ‘an unanticipated by-product’ of the experiment in automation. Astronomy was the field which necessitated the minute time measurements even before the modern time measuring device, in order to ascertain the locations and movements of the celestial bodies. Despite these early advances in astronomy and clock making, it is in Europe that the invention of the mechanical clock took place and it remained a monopoly for hundreds of years within Europe (Landes 55).

The appearance of the weight-driven mechanical clock with its wheels and pinions and oscillatory motion to track the course of time was a turning point in the history of human civilization as argued by Landes, and the stepping stone of modernity in spite of the early time keepers such as sun dials, water clocks, fire clocks and sand clocks. He also believed that: ‘It is the mechanical clock that made possible, for better or worse a civilization attentive to the passage of time, hence to productivity and performance’ (Landes 7). Thus I wish to point out that mechanical clocks enabled time measurements and its awareness to reach the masses compared with the possession of time devises only by certain sections of society like monasteries etc. as mentioned earlier.

Landes’ argument summarises the long history behind the invention of the mechanical clock and the interest that led to it as: ‘the clock did not create an interest in time measurement; the interest in time measurement led to the invention of the clock’ (58). One fact in the history of clocks that I find very interesting is that there is not a single person who claims to be the inventor of the mechanical clock. However during my search I could find some speculation on certain people who could have been the possible inventors. Joseph Needham, a scientist and historian of science who wrote many books on science and civilization of China, believed that the idea of the mechanical clock was copied from the early Chinese water clocks though he never proved it (Landes 21). I think as much as Landes accredits this invention to the European intelligence, Needham was obsessed with its Chinese credentials. Derek de Solla

Price believed that the first mechanical clock was made as a by-product of an astronomical device by Wallingford and Dondi (Landes 54). He laments that the mechanical clock has 'degenerated into simple time-keepers' and has become 'a fallen angel from the world of astronomy' (55). Landes also hints at the speculation of possibility of the production of a mechanical clock or accumulation of enough knowledge for its creation as early as the year 1000 by Gerbert who later became Pope Sylvester II who had learned mathematics from Jewish and Muslim scientists. But for reasons which are not investigated enough or proved, another three hundred years had to be passed for the arrival of a mechanical clock (53, 54).

Whoever was/were involved in this invention, I feel that nothing more versatile could have happened in the history of time, because it completely transformed not only the notion of time, but the social, political, economic and cultural position towards time. Landes believes that whoever was the genius who built the heart of the mechanical clock, it was a great invention:

> Achievement of that unknown genius who built the first mechanical clock had made use of oscillatory motion to divide time into countable beats. This was the great invention; this was the heart of the clock. By so doing he set time measurement on a new path and planted the seed of all subsequent improvements in chronometry. Nothing done elsewhere is comparable. (11)

This technology made possible minute calculation of time and mass production of clocks at a later stage so that everyone could possess measured time.

I think that the mechanical clock was so important because it brought measured time to the reach of everyone, which was an impossible task with the crude and gigantic clocks. The clock itself as a technological innovation did not produce any goods like the machinery of the industrial revolution that produced various goods, but it deeply influenced the production process of every product in the world. Even though the clocks did not produce any material end product, the clock industry thrived as there was demand and buyers for it. It seems to me that this was due to the time consciousness and peoples' awareness of the value of measured

time. Time in turn assumed an essential situation in every mode of production that the public tower clocks and bells began to play an integral part in everyone's life.

The technology of the mechanical clocks allowed miniaturization and the production of miniature clocks and watches that lead to the personal possession of time either hung on the neck or tied to the wrist. The possibility of having time at home or on the person as a result of this technology had profound consequences on society and culture with the notion of personal time (Landes 89). This familiarity and close awareness of measured time perhaps helped the industrial workers to escape exploitation of extra working time. According to Landes, 'privatization (personalization) of time was a major stimulus to the individualism that was an ever more salient aspect of Western civilization'... A turning hand, specifically a minute hand, is a measure of time used, time spent, time wasted, time lost' (89). I think hence the mechanical clocks assisted to put an end to the idyllic life by bringing in a kind of accountability through minutely measured time precision. Time reckoning seriously initiated by the monastic religions, navigation, and astronomy slowly entered into the daily life of people.

Landes says that the early Christians followed the Jewish practices of prayer with morning and night recitations to which prayers at quarterly set time were later added (60). I think this was perhaps the first timetable though they resembled and were known as rules (e.g. The Rule of St. Benedict). Early monastic life revolved around fixed time schedules set aside for prayers alone. Benedictines were a group of monks who lived in isolation with the purpose of self perfection in earthly life time for the life in the hereafter. The Rule of St. Benedict written in the sixth century for the Benedictines stresses the observance of temporal arrangements. With the help of medieval temporal aids like the burning candle or water-clocks, day time as well as night services were set in time. Work, study, meals and sleep also got into the strict time schedules of the monastic order. Into the religious temporal

arrangement of prayers St. Benedict inserted other worldly activities like work, study, sleep, etc. and perhaps that was the first step of secularisation of time. Lewis Mumford proclaims the Benedictines to be the founders of modern capitalism as they helped to give 'human enterprise the regular collective beat and rhythm of the machine as they had anticipated a later stage of mechanization (Van Rossum 34). Mumford's comment on the monks sounds to me like a comment on the activities of a political or commercial organisation with secular credentials rather than a religious group.

Inside the closed and restricted space of the monasteries, community time was measured and kept because time belonged to God and the group or the community. Monastic orders maintained punctuality with prescribed rules of penalties and penance for late comers. The monastic rules and regulations enforced by tolling bells for divine worship, offices, meals, and prayers as well as all the other activities were separately written with precise time details. The amount of time spent by the monks in the cloistered monasteries with the strictly ordered temporal schedule reminds me of a train compartment and the fixed time schedules with which the train starts, runs, stops at stations, etc. in a mechanical temporal order.

Sports and science, as Landes argues, also demanded minute and precise time measurement (12). In sports, I think it was necessary in order to judge the winners of races in competitions with fractions of seconds for which observation of the naked eye could not be depended upon. Commerce and economics as emerged and reformulated the modern social structure; precisely measured time became a necessity. The commercial needs and use of time surfaced as opposed to the religious time as Le Goff suggests the transition from the Church's time to the merchant's time (35). This transition perhaps was escalated through the faster travel and communication developments like the railways. The installation of striking clocks in the public places was the preface to the notions of public time and personal time. Though the

church tower bells proclaimed public time, they were not secular, for they were intended to remind the laity the time of devotion and prayer.

With the arrival of the public clocks language of time changed. Van Rossum gives a detailed account of the expressions of time that changed from time to time according to the precision of the time tracking devices. For example, the previous expressions like ‘at sunrise’, ‘at time vespers’ etc. were supplemented with the use of modern forms like ‘4 hours after noon’ (220). The changes in expressions of time, I think may be proof of the changes in the perception of time of people, and these phenomena may be observed often in conservations, in literature and in the social media. The history of clock though quite elaborate, I think cannot be complete without the mention of the modern atomic clocks. ‘Atomic clocks are the most accurate timekeeping devices known to date. Accurate to within a few seconds over many thousands of years, they are used to calibrate other clocks and timekeeping instruments’ (Dick 484).

Ritualization of Time

Thomas A. Harris defines ritual as ‘a socially programmed use of time where everybody agrees to do the same thing... there are worship rituals, greeting rituals, cocktail party rituals’ (95). A ritual may transform the time and space connected with it to be sacred and religious. According to Mircea Eliade ‘Every religious festival, any liturgical time, represents the reactualization of a sacred event that took place in a mythical past, ‘in the beginning’ (69). Worship or religious rituals perhaps are thus a sort of a re-enactment of the ancient acts of God enacted during the beginning. As most of the religious festivals are observed yearly, it is perhaps a cycle of regenerations in cyclical time. Church calendar or the liturgical calendar, although appearing linear; the events seem to repeat cyclically year after year. Thus even in a

culture that follows linear time, the rituals and liturgical order appear in the form of cyclical order of time.

According to the theory of entropy, the beginning was the state of high order and the disorder is increased slowly. As the rituals are believed to be regenerating and recreating, through them it seems an effort is made to recreate the order that existed in the beginning in a world of disorder. The meaning and quintessential objectives of rituals may be understood from the following passage perhaps as how time is ritualized:

> When a Christian participates in the Eucharist or a Jew in the Seder, they are reliving the original Last Supper and the Exodus. The sacred power that was present during the original event is re-created. It is an experience of *ritual remembering* that connects the participant not only to the original actors, but to all those who have performed the same ritual throughout the ages. In this way past and present are integrated, providing the participant with a sense of continuity; profane time is subordinated and sacred, eternal time emerges.[34]

Rituals and the celebrations associated with them thus seem to have certain objectives; for example, New Year is celebrated by the people of almost all cultures around the world with great joy and fan fare. Mircea Eliade explains the idea behind the New Year celebrations: 'The cosmos is conceived as a living unity that is born, develops, and dies on the last day of the year, to be reborn on New Year's Day' (73). A new birth of time is perhaps thus ritually experienced and celebrated. Most of the Christian prayers conclude with an invocation of time past, present and future 'as it was in the beginning, is now, and ever shall be world without end.'[35]

I think every religion has sacred days and sacred hours marked for ritualism. Monastic life in the past witnessed the monks tracking time with great fervour and ritualizing time itself by

---

[34]Sebastian Fedden, Lera Boroditsky. 'Ritualization of Time'. *Front Psychol*. 2012; 3: 485. Published online 2012 November 19. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3503482/>

[35]It is a part of Gloria Patri, the Trinitarian doxology addressed in parallel fashion to all three Divine Persons of the Trinity: Glory be to the Father, to the Son and to the Holy Spirit, which is repeated in the rosary. For more details please refer to *The Catholic Encycloledia*(1909), <http://www.newadvent.org/cathen/05150a.h...>

marking every hour with particular rituals of prayers. Indian religion also separates auspicious time and inauspicious time for all occasion and it ritually specifies the *muhurats* (auspicious/lucky time) derived from astrological calculations for important events to commence. Rituals conducted during ritually inauspicious times are deemed to return bad luck and disaster.

Standardization of Time

As Landes argues, there was no standard regulation of time in the sixteenth and seventeenth centuries and different countries and places began their day at different hours—some at sunrise, some at sunset, some at noon. Monastic time reckoning concerned the activities of a particular monastery and hence I think that time scheduling with synchronization of time of different places and clocks was not necessary. Van Rossum narrates the story of an ordinance supposedly issued by King Charles V of France to be the first step in synchronization of time. During the early days clocks perhaps did not display uniform time measurements in different places or even within the same geographical locations. Time consciousness and discipline in turn might have demanded the synchronization of time as various clocks differed in their display of time. This disagreement of clocks must have started new labour issues of starting and ending of work time. Perhaps to solve such problems, as Van Rossum suggests, Charles V installed striking clocks at his residences and issued an ordinance in 1370 requiring all the churches in Paris to regulate their clocks according to the clocks at the palace that all clocks in the city should be in harmony with the one installed in his palace (18). Whether the ordinance was real or not it has pointed well towards the modern forms of time reckoning and also the change in time consciousness. With industrialization, more precise time measuring was necessary and it was the railways that needed minute precision and uniform time. The railway is said to have ritualized and spatialized time as Marian Aguiar argues that railways first spatialized time in the form of a timetable and second, it ritualized time through

scheduled arrivals and departures marked by a signal (16). The railway used time more ardently than the religious, and to the minute precision for its technical operations which in turn extended to the general public—its customers.

Until the sixteenth and seventeenth centuries public clocks were installed in every city and almost every village as an ornament as well as the pride and prestige of the territory through communal initiatives, through the efforts of kings, lords or the churches, as Van Rossum narrates in detail (125-172). People followed their own public clocks, time and bells for ordering various activities. Each clock maintained its own local time until the middle of the nineteenth century without any major concerns perhaps because the transport systems run on animal power were too slow to have any temporal conflict. In the nineteenth century the revolution in transport system—the railways, enabled speedy travel to cover many local time regions on the same day. As the speed of trains increased and the railway network increased its density, the railways had to set up a schedule and communicate it to the public. This perhaps was a common concern in every country that had introduced the railway system. A kind of synchronization was necessary and as a result standard time came into existence. Van Rossum says that 'the plans to synchronize all local times into one world time or "standard time" came from America, which had seventy one railway times in 1873' (348).

Standardization of time is capturing time to the finest precision and evaluating the difference according to the longitudinal variations and synchronizing of the solar mean time. Standard Time may be defined as the civil time officially adopted for a country or region, usually the civil time of some specific meridian lying with the region, with a difference of exactly one hour between one zone and the next with a total of twenty four zones as the surface of the earth is divided.[36] A time zone is a region that observes a uniform standard time for legal, commercial, and social purposes. Time zones tend to follow the boundaries of countries and

[36]*Random House Kernerman Webster's College Dictionary*, © 2010 K Dictionaries Ltd.

their subdivisions because it is convenient for areas in close commercial or other communication to keep the same time.[37] I would like to believe that the concept of time got a wider perspective and universal understanding with these developments reducing the gap between the temporally advanced countries and the less advanced countries with a common system for all.

Daylight Saving Time (DST),[38] also called summer time was worked out to make better use of the natural daylight by setting the clocks forward one hour during the summer months, and back again. The difference in summer time in daylight is obvious in the localities near the Poles. In places away from the equator there is more sunlight in summer than in winter and it increases with the proximity to the Poles.

Railway Time

At the dawn of the train industry, the perceptions of time and space that had evolved during the span of many centuries seemed to undergo a sudden alteration and I think the term 'railway time' serves as testimony. Railway time got to dominate all other known time due to the growing importance of the technology. Landes says that there were clocks and measured time in every locality in Europe before the arrival of the trains, but the need for creation of time zones and their agreement was the result of the ever growing rail traffic. Before the train technology started, there were no time zones and no standardization was necessary, because of the slow speed of vehicles of the earlier transportation systems. They took a long time to reach places of small distance and were not possibly affected by the slight differences in the local time. It is interesting to note that it was just a century before that the world formed a standard time as the need was not there before and each place could manage with its own local time system. The railways too have a history of evolution of time management and

[37] *The American Heritage® Dictionary of Student Science*, Second Edition.
[38] 'Daylight Saving Time-DST'.<http://www.timeanddate.com/time/dst/>

synchronization. In the nineteenth century, timekeeping by the railways was done by means of a system developed in the UK in 1852, in which time signals were sent telegraphically from the Royal Observatory at Greenwich to various railway stations and the station clocks and station master's watch or timepiece was adjusted appropriately.[39] Landes compares the older traffic systems with the nineteenth century rail traffic with more than double the speed of the earlier means and states that they demanded standardized and synchronized time for their successful operation:

> It was not until the coming of the railway in the nineteenth century that a faster, denser traffic compelled the establishment of regional and national time zones; and not until the end of the nineteenth and start of the twentieth that international agreements reduced these to a global system. (34)

I think this standardization of time and the creation of the time zones to be perhaps the biggest ever temporal change that the railway initiated. Though all these do not affect the passage of time, it transforms the human understanding of temporal relations, time in different places, time and speed etc. Schivelbusch thinks that the railroads deprived the temporal identity of the regions as the spaces in between two stations were like annihilated because of the speed that connected the two stations. He quotes from Philip S. Bagwell to show regional temporal identities like 'London time that ran four minutes ahead of time in Reading, seven minutes and thirty seconds ahead of Cirencester time, and fourteen minutes ahead of Bridgewater time' (124). Schivelbusch states that as long as the regions were isolated and the traffic was slow these temporal differences were negligible. The technology of speed while compressed the traveling time of the past, long distances started creating confusion due to the variation of time and in order to avoid this confusion, the regular train traffic needed standardized time. Schivelbusch gives a chronological account of the standardization process of time: 'In 1840 individual railway companies in England began standardization of time in their own lines. As the rail network grew denser, incorporating

[39] Indian Railway Fan Club's website.<http://www.irfca.org>

more and more regions, the retention of local times became untenable: in 1880, railroad time became general standard time in England… In 1884, an international conference on time standards, held in Washington, DC, divided the world into time zones' (43-44). Thus the railway brought the world under a common temporal scheme which I think perhaps gave an impression, to use Marshall McLuhan's term, 'global village' (43).

The temporal history of India or any other colonized country mainly has three major divisions that consist of pre-colonial, colonial and post-colonial periods. The Indian subcontinent had made some progress in astronomy, but the modern clocks were brought in by the British especially for the use of the railways. Along with their modern clocks and straight railway tracks they also brought in the notion of linear time. A novel time measurement and a new calendar got official in a country where every religion and every linguistic division have a separate calendar. The concept of Judeo-Christian culture was introduced in India where the eras began to be addressed B.C. (Before Christ) and A.D. (Anno Domini) which seems to be recently changing into more secular terms like B. C. E (Before the Common Era) and C.E (the Common Era).

In the subcontinent too temporal developments took place in a similar way as it occurred in England. I would like to quote from the Indian Railway Fan Club's website as this transformation is documented. 'In the very early days of the railways in India, local time was observed at each large city, in common with practice in most other countries at the time. Bombay and Poona, for instance, had their own local times differing by about seven minutes. There were anomalies too, as Ahmadabad strangely observed Madras local time though these places were located at great distance. Because of their importance as administrative as well as commercial and economic centers, Bombay Time and Calcutta Time assumed special importance and were followed for many official purposes in the late 19th century (Bombay

Time from 1884), effectively forming two time zones for British India'.[40] This seems to be the first step of standardization of time in India, and the Indian reaction as mentioned in the web site was of resistance as establishment of a standardized time for the whole nation was seen as an assertion of power by the dominant administration. It was opposed vehemently in Karachi and Bombay setting back the project many times. I think the people objected because it was a fundamental cultural perception that was to be transformed by the imposition of the conceptions of an alien culture. However the railways a colonial legacy got established by the colonial power in India and also got its schedule standardized in spite of the local resistance. Jim Masselo points out that, though the Greenwich Time was accepted by world's dominant powers in 1884, it was only in 1905 that standardization was implemented in India after constant efforts of the observatory committees of Royal Society and the railway establishment (174-175). I think to run a network of railways standard time is an essential factor and hence time itself is of great value in the context of the railways. Since the railways are considered as a lifeline to India, along with it the time factor too is perhaps crucial in running that lifeline and in turn got imbibed into the culture and civilization of the country.

Conclusion

In my effort to trace the possible changes that might have occurred in the notion of time, I have tried to look at some of the existing theories of time, its history and its various manifestations. One change that certainly took place after the railways was that people learned to take time seriously and strictly followed it at least when they had to travel by trains because it implied missing a journey or a delivery of a parcel, etc. The speed of the early trains about three to four times more than the speed of the previous means was felt and described by the first travellers as the 'ultimate in speed' and 'the flight of birds' (Van Rossum 347). Charles Dickens equated it to 'a flight' in his short story titled 'A Flight' (143).

[40]Indian Railway Fan Club's website.<http://www.irfca.org>

Even during the initial days with the reasonable speed of the early trains, people imagined it to be something astonishing. As Schivelbusch has said, it was felt as emancipation from nature and ‘annihilation of space and time’ as journeys could be completed in one tenth of the time the previous modes of travel took. It seems to me that a historical change was triggered by the trains in the temporal history and people’s perceptions.

Time is measured, and its relation with motion and forces is understood. Everyone knows that clocks are nothing but representatives of time, and they are not ‘time’ per se. People get their life regulated by time and all their activities are ordered in time. According to me an ordinary individual need not be troubled by questions like if it is linear time or circular time in which he/she lives, though the human subject is well aware of the definite end of one’s time—mortality. This end is of the individual and a universal end is undefined and indefinite. All the progress in understanding time through hundreds of years have passed perhaps without any significant progress in finding satisfactory answers to many of the questions about time which had been posed at the outset.